

Attorney Docket No.  
COE-523

PATENT APPLICATION  
Serial No. 10/045,381

**AMENDMENTS TO THE CLAIMS**

1. (Canceled).

5 2. (Canceled).

3. (Canceled).

10 4. (Currently Amended): A system simulating at least one natural hydraulic cue eliciting an instinctive response of fish to select a portion of a stream having a near maximum downstream velocity vector,  $u$ , and at least minimum strain rate variables in the downstream direction with respect to the depth and the width of said stream, said minimum variables represented mathematically as  $\frac{\partial u}{\partial z}$  and  $\frac{\partial u}{\partial y}$ , respectively, comprising

15 at least an oven hood surface bypass collector (OH-SBC), having length, width and depth, a top and a bottom, an interior surface and an exterior surface, a main portion with at least one slot opening at said bottom and at least one first extension that projects upstream from said at least one barrier along said width, said OH-SBC further comprising:

20 at least one internal sluiceway circumscribed at least in part by said first extension,

wherein said at least one internal sluiceway runs parallel to said upstream side of said at least one barrier, and

wherein said first extension is wedge shaped with the point of the wedge positioned farthest away upstream from said main portion, and

25 wherein said first extension maintains the same profile on its top as said main portion, being an unbroken extension thereof, and

wherein said first extension eliminates at least one zone of dead water that may be adjacent said upstream side of said barrier; and

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at least one collector gallery that parallels said sluiceway immediately adjacent  
said upstream side of said at least one barrier and is circumscribed at least in part  
by said main portion of said OH-SBC,  
wherein said fish are attracted to said collector gallery by said simulated hydraulic cue  
5 maintained by said system, and  
wherein said fish are moved around said barrier by at least partially de-watering said  
collector gallery; and  
at least one articulating extension affixed to said lower part of said collector  
gallery,  
10 wherein said articulating extension at least partially controls the angle of attack of the  
water that flows under said collector gallery, and  
wherein said OH-SBC is positioned with said length adjacent and parallel to said  
upstream side of said at least one barrier, and  
wherein said top is generally parallel to the surface of said water in which said OH-SBC  
15 operates, and  
wherein both  $\frac{\partial u}{\partial z}$  and  $\frac{\partial u}{\partial y}$  ideally approach zero, and  
wherein said depth of said OH-SBC is selected to permit passage of fish of a pre-  
specified size.

- 20 5. (Currently Amended): The system of claim 3 4 further comprising at least one sensor,  
wherein said at least one sensor alerts to changing hydraulic conditions, permitting  
adjustment of said system.
6. (Canceled).
- 25 7. (Canceled).
8. (Canceled).

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9. (Canceled).

10. (Canceled).

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11. (Currently Amended): The system of claim 7 ~~4~~ in which said at least one barrier is selected from the group consisting of a dam, a hydroelectric powerhouse, a weir, a boom, a berm, a sluice gate, and a spillway, and combinations thereof, wherein each member of said group has at least one intake on said upstream side, and wherein said system is movable vertically without changing the horizontal orientation of said system to facilitate operation at an optimum level with respect to said at least one intake, and wherein said system operates to overcome at least one natural cue resultant from the operation of said at least one intake.

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12. (Currently Amended): The system of claim 4 in which at least one of said ~~at least one~~ natural hydraulic cues is at least one visual cue ~~that is precluded from occurring thus facilitating passage of said fish around said barrier.~~

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13. (Currently Amended): The system of claim 12 ~~in which said at least one visual cue is precluded by~~ further comprising painting a neutral color on the inside of said collector gallery a neutral color.

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14. (Previously Amended): The system of claim 4 in which turbulence in said collector gallery is minimized by providing a smooth surface on said interior surface of said OH-SBC and applying a coating to said smooth surface, wherein said coating has a low coefficient of friction.

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15. (Currently Amended): The system of claim 4 in which said ~~wedge-shaped~~ first extension completely covers the space above and immediately upstream of ~~each of said at least one~~ an intakes of said a dam,

5 wherein said ~~wedge-shaped~~ first extension further displaces any eddy otherwise occurring above ~~each of said at least one~~ intakes and in the vicinity of said slot opening to said collector gallery.

16. (Previously Amended): The system of claim 4 further comprising at least one active stimulus provided in the region of said collector gallery, said stimulus selected from the  
10 group consisting essentially of natural light, artificial light, sound, and combinations thereof.

17. (Canceled).

15 18. (Canceled).

19. (Canceled).

20. (Canceled).

20 21. (Canceled).

22. (Canceled).

25 23. (Previously Presented): A system simulating at least one natural hydraulic cue to which fish are responsive in water, said at least one natural hydraulic cue eliciting an instinctive response of fish to select a portion of a stream having a near maximum downstream velocity vector,  $u$ , and at least minimum strain rate variables in the downstream direction with respect to the depth and the width of the stream, said variables represented

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mathematically as  $\frac{\partial u}{\partial z}$  and  $\frac{\partial u}{\partial y}$ , respectively, such that both said variables ideally approach zero, said system comprising at least an oven hood surface bypass collector (OH-SBC), having length, width and depth, a top and a bottom, an interior surface and an exterior surface, a main portion with at least one slot opening at said bottom and at least one extension that projects upstream from at least one barrier along said width, said barrier having at least an upstream and a downstream side, said OH-SBC further comprising:

at least one internal sluiceway circumscribed at least in part by said extension, said sluiceway running parallel to said upstream side of said at least one barrier, wherein said OH-SBC is positioned with said length adjacent and parallel to said upstream side of said at least one barrier, and wherein said top of said OH-SBC is generally parallel to the surface of said water in which said OH-SBC operates, and wherein said extension eliminates at least one zone of dead water that may be adjacent said upstream side of said barrier, and wherein said extension is wedge shaped with the point of the wedge positioned farthest away from said main portion, and wherein said extension maintains the same profile on its top as said main portion, being an unbroken extension thereof;

at least one collector gallery that parallels said sluiceway and is circumscribed at least in part by said main portion of said OH-SBC, at least one articulating extension affixed to said lower part of said collector gallery, wherein said articulating extension at least partially controls the angle of attack of the water that flows under said collector gallery, and wherein said fish are attracted to said collector gallery by said simulated hydraulic cue maintained by said system, and

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wherein said fish that respond to said at least one simulated hydraulic cue circumvent at least one barrier to the downstream migration of said fish, and wherein said fish are moved around said barrier by at least partially de-watering said collector gallery; and  
5 wherein said depth is selected to permit passage of fish of a pre-specified size.

24. (Previously Presented): The system of claim 23 further comprising at least one sensor, wherein said at least one sensor alerts to changing hydraulic conditions, permitting adjustment of said system.

10 25. (Currently Amended): The system of claim 23 in which at least one of said ~~at least one~~ natural hydraulic cues is at least one visual cue ~~that is precluded from occurring thus facilitating passage of said fish around said barrier.~~

15 26. (Currently Amended): The system of claim 25 ~~in which said at least one visual cue is precluded by~~ further comprising painting a neutral color on the inside of said collector gallery ~~a neutral color.~~

20 27. (Previously Presented): The system of claim 23 in which turbulence in said collector gallery is minimized by providing a smooth surface on said interior surface of said OH-SBC and applying a coating to said smooth surface, said coating having a low coefficient of friction.

25 28. (Previously Presented): The system of claim 23 in which at least one additional stimulus is provided in the region of said collector gallery, said stimulus selected from the group consisting essentially of natural light, artificial light, sound, and combinations thereof.